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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,472

06/23/2006

Koichiro Tanaka

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31780

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09/03/2008

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EXAMINER

LINDSAY JR, WALTER LEE

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/584,472	Applicant(s) TANAKA ET AL.	
	Examiner Walter L. Lindsay, Jr.	Art Unit 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-48 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/23/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 3-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiroyuki (Japanese Patent No. 2000-340503 dated 08/12/2000).

Hiroyuki shows the method as claimed in Figures and corresponding text as: delivering a laser beam to a semiconductor layer [0007]; scanning the semiconductor layer to a first direction with the laser beam in a first intensity [0007-0008]; and scanning the semiconductor layer to a second direction with the laser beam in a second intensity [0007-0008], wherein the first intensity is larger than the second intensity [0007-0008] (claim 1). Hiroyuki teaches the first direction and the second direction is reverse direction (the examiner takes “reverse direction” to mean the direction in which the substrate moves with respect to the beam) [0009] (claim 3). Hiroyuki teaches the semiconductor layer moves to a direction reverse to the first direction, when the

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semiconductor layer is scanned to a first direction (the examiner takes “reverse direction” to mean the direction in which the substrate moves with respect to the beam) [0009] (claim 4). Hiroyuki teaches the semiconductor layer moves to a direction reverse to the second direction, when the semiconductor layer is scanned to a second direction (the examiner takes “reverse direction” to mean the direction in which the substrate moves with respect to the beam) [0009] (claim 5).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroyuki (Japanese Patent No. 2000-340503 dated 08/12/2000) in view of Koichiro et al. (Japanese Patent No. 2003-257885 dated 09/12/2003).

Hiroyuki shows the method as substantially claimed and described in the preceding paragraphs.

Hiroyuki lacks anticipation only in not explicitly teaching that: 1) the laser beam is delivered obliquely to the semiconductor layer (claim 2).

Koichiro teaches a method for irradiating Laser and a Laser irradiator. The invention is entering a laser beam aslant to a convex lens, produces which astigmatic aberration, and makes a line shape of a laser beam in an irradiation surface or its neighborhood [0013]. This is done to limit the returned light which can cause adverse effects [0011].

It would have been obvious, to one of ordinary skill at the time the invention was made, to modify Hiroyuki, by using a laser beam obliquely to the semiconductor layer, as taught by Koichiro, with the motivation that Koichiro wants to limit the returned light which can cause adverse effects.

7. Claims 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroyuki (Japanese Patent No. 2000-340503 dated 08/12/2000) in view of Koichiro et al. (Japanese Patent No. 2003-257885 dated 09/12/2003).

Hiroyuki shows the method substantially as claimed in Figures and corresponding text as: emitting a first laser beam [0007]; delivering a laser beam to an irradiation surface; [0007-0008], and scanning the irradiation surface with a laser beam [0007-0008] (claim 6). Hiroyuki teaches the semiconductor layer moves to a direction reverse to the scanning direction, when the irradiation surface is scanned with the laser beam(the examiner takes “reverse direction” to mean the direction in which the substrate moves with respect to the beam) [0009] (claim 11). Hiroyuki teaches the irradiation surface is a surface of a semiconductor layer [0009] (claim 12).

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Hiroyuki lacks anticipation only in not explicitly teaching that : 1) changing the first laser beam into a second laser beam through means for varying beam intensity which can vary beam intensity in accordance with a scanning direction; changing the second laser beam into a third laser beam; delivering the third laser beam to an irradiation surface; and scanning the irradiation surface with the third laser beam (claim 6); 2) the third laser beam is delivered obliquely to the irradiation surface (claim 7); 3) the first laser beam is emitted from a laser oscillator (claim 8); 4) the means for varying beam intensity comes at least one of polar plates and an ND filter (claim 9); 5) the second laser beam is changed into a third laser beam through at least one of a convex and a diffractive optical element (claim 10); and 6) the irradiation surface moves to a direction reverse to the scanning direction, when the irradiation surface is scanned with the third laser beam (claim 11).

Hiroyuki discloses two beams of different energies both beams would be subject to the methods of Koichiro.

Koichiro teaches a method for irradiating Laser and a Laser irradiator. The invention is entering a laser beam aslant to a convex lens, produces which astigmatic aberration, and makes a line shape of a laser beam in an irradiation surface or its neighborhood [0013]. The laser source to be changed is an oscillation laser [0016]. ND filters are common components in laser exposure apparatus. This is done to limit the returned light which can cause adverse effects [0011].

It would have been obvious, to one of ordinary skill at the time the invention was made, to modify Hiroyuki, by using a laser beam obliquely to the semiconductor layer,

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and the alteration of the laser beam as taught by Koichiro, with the motivation that Koichiro wants to limit the returned light which can cause adverse effects.

8. Claim 13-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koichiro et al. (Japanese Patent No. 2003-257885 dated 09/12/2003) in view of Hiroyuki (Japanese Patent No. 2000-340503 dated 08/12/2000).

As it pertains to the apparatus of claims 13-48, Koichiro teaches an apparatus that alters laser beams using a convex lens. Koichiro teaches solid state laser, gas laser, or metal laser of continuous oscillation or pulse oscillation: such as an YAG laser, YVO₄ laser, YLF laser, YALO₃ laser, Glass laser, ruby laser Ti:sapphire Laser, Ar laser, Kr laser and CO₂ laser. [0013-0016] Koichiro also teaches the use of non linear optics to manipulate laser harmonics[0017].

See In re Aller, Lacey and Hall (10 USPQ 233-237) It is not inventive to discover optimum or workable ranges by routine experimentation. Note that the specification contains no disclosure of either the critical nature of the claimed ranges or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 f.2d 1575,1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Koichiro lacks anticipation only in not explicitly teaching that: 1) wherein beam intensity is varied in every scanning direction by means for varying beam intensity(claims 13, 22, 31 and 40).

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Hiroyuki teaches a method of annealing thin films. Wherein there are to laser beams use that have different energies and travel in different direction in reference to the substrate [0007-0008]. This helps to minimize dispersion and stop surface roughness [0005].

It would have been obvious, to one of ordinary skill at the time the invention was made, to modify Koichiro by implementing beams of different energy, as taught by Hiroyuki, with the motivation to minimize dispersion and stop surface roughness.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter L. Lindsay, Jr. whose telephone number is (571) 272-1674. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Garber can be reached on (571) 272-2194. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Walter L. Lindsay, Jr.
Primary Examiner
Art Unit 2812

/Walter L. Lindsay, Jr./
Primary Examiner, Art Unit 2812